Munich Cancer Registry

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ICD-10 C30, C31: Nasal cavity, middle ear, sinuses cancer

Incidence and Mortality

Year of diagnosis	1998-2014
Patients	554
Diseases	558
Creation date	04/13/2016
Export date	12/23/2015
Population	4.64 m

Munich Cancer Registry at Munich Cancer Center
Marchioninistr. 15
Munich, 81377
Germany

http://www.tumorregister-muenchen.de/en

http://www.tumorregister-muenchen.de/en/facts/base/bC3031E-ICD-10-C30-C31-Nasal-cavity-middle-ear-sinuses-cancer-incidence-and-mortality.pdf

Global Statements about the statistics on the Internet −
Baseline Statistics (grey button), **Survival** (red button)

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.64 million inhabitants, account for the frequency of cancer diseases[##] and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases[###] are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, April 2016

[#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.51 million to 3.96 in 2002, and to 4.52 million in 2007).

[##] Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

[###] DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

Some remarks regarding this cancer type

As a general rule, these few results from the TRM form the basis of sophisticated analyses. For head and neck tumors this is not the case. Therefore the results for head and neck tumors should be interpreted with caution. In part this is due to problems of classification because of limited specific details of locality. Additionally, with advanced tumors in a close topographic location it is often not possible to determine the exact ICD localization of a tumor.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C30.-	Malignant neoplasm of nasal cavity and middle ear
C30.0	Nasal cavity
C30.1	Middle ear
C31.-	Malignant neoplasm of accessory sinuses
C31.0	Maxillary sinus
C31.1	Ethmoidal sinus
C31.2	Frontal sinus
C31.3	Sphenoidal sinus
C31.8	Overlapping lesion of accessory sinuses
C31.9	Accessory sinus, unspecified

INCIDENCE

Table 1

All patients with invasive cancer by year of diagnosis, proportions of DCO, multiple primaries, deaths, and active follow-up (incl. DCO)

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %	
1998	21	1	4.8	33.3	81.0	95.2	
1999	18			38.9	77.8	100.0	
2000	20	1	5.0	20.0	70.0	100.0	
2001	13	1	7.7	23.1	76.9	100.0	
2002	25	2	8.0	28.0	80.0	100.0	#
2003	38	2	5.3	34.2	76.3	94.7	
2004	23			34.8	52.2	100.0	
2005	31			35.5	77.4	100.0	
2006	39	3	7.7	35.9	71.8	94.9	
2007	44	3	6.8	31.8	45.5	79.5	#
2008	40	2	5.0	25.0	50.0	77.5	
2009	47			27.7	48.9	76.6	
2010	54	1	1.9	18.5	37.0	75.9	
2011	50	2	4.0	30.0	48.0	72.0	
2012	55	1	1.8	25.5	23.6	81.8	
2013	30			26.7	23.3	100.0	
2014	10	1	10.0	50.0	40.0	100.0	##
1998-2014	558	20	3.6	29.2	53.6	87.3	

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be found in the respective headings.

Table 1a

All patients with invasive cancer
by year of diagnosis and gender
(incl. DCO)

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	21	15	6	71.4
1999	18	11	7	61.1
2000	20	15	5	75.0
2001	13	8	5	61.5
2002	25	14	11	56.0
2003	38	23	15	60.5
2004	23	15	8	65.2
2005	31	20	11	64.5
2006	39	21	18	53.8
2007	44	30	14	68.2
2008	40	28	12	70.0
2009	47	29	18	61.7
2010	54	36	18	66.7
2011	50	36	14	72.0
2012	55	29	26	52.7
2013	30	21	9	70.0
2014	10	4	6	40.0
1998-2014	558	355	203	63.6

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	15	6	1.4	0.5	0.8	0.3	1.2	0.4	1.7	0.5
1999	11	7	1.0	0.6	0.6	0.2	0.8	0.3	0.9	0.6
2000	15	5	1.3	0.4	0.8	0.2	1.2	0.3	1.5	0.3
2001	8	5	0.7	0.4	0.4	0.2	0.6	0.2	0.9	0.3
2002	14	11	0.8	0.6	0.4	0.3	0.6	0.4	0.8	0.5
2003	23	15	1.2	0.8	0.8	0.4	1.1	0.5	1.3	0.7
2004	15	8	0.8	0.4	0.5	0.2	0.7	0.3	0.9	0.3
2005	20	11	1.1	0.6	0.6	0.2	0.8	0.3	1.0	0.4
2006	21	18	1.1	0.9	0.7	0.5	0.9	0.6	1.1	0.8
2007	30	14	1.4	0.6	0.8	0.3	1.1	0.4	1.4	0.5
2008	28	12	1.3	0.5	0.8	0.3	1.0	0.4	1.1	0.4
2009	29	18	1.3	0.8	0.8	0.4	1.0	0.5	1.3	0.6
2010	36	18	1.6	0.8	1.0	0.3	1.3	0.5	1.5	0.6
2011	36	14	1.6	0.6	0.8	0.3	1.2	0.4	1.4	0.5
2012	29	26	1.3	1.1	0.8	0.5	1.0	0.8	1.2	0.9
2013	21	9	0.9	0.4	0.5	0.2	0.7	0.3	0.9	0.3
2014	4	6	0.2	0.3	0.1	0.2	0.1	0.2	0.2	0.2
1998–2014	355	203	1.1	0.6	0.6	0.3	0.9	0.4	1.1	0.5

The computation of the incidence measures includes all primaries, irrespective of first or subsequent malignancy.

Table 3

Age distribution parameters by year of diagnosis (All patients)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	21	66.3	12.4	38.0	84.5	53.1	62.1	67.1	74.9	80.4
1999	18	63.9	15.0	33.5	82.4	36.0	59.3	66.5	75.8	80.9
2000	20	65.7	16.4	20.4	90.5	46.9	58.3	67.2	74.5	86.6
2001	13	66.9	18.0	37.4	89.9	44.6	53.0	66.8	83.6	84.7
2002	25	67.8	12.8	41.3	92.7	51.7	61.1	66.1	77.9	83.3
2003	38	65.0	16.1	16.2	91.8	46.1	52.5	67.1	78.9	84.2
2004	23	65.5	15.3	25.9	88.6	46.5	58.3	65.3	78.9	82.7
2005	31	68.6	15.3	31.7	96.1	44.7	58.3	71.1	78.1	83.7
2006	39	64.9	13.4	24.1	91.0	48.9	54.0	64.8	75.1	81.3
2007	44	63.0	16.0	20.2	86.2	39.0	54.0	64.9	77.5	81.4
2008	40	61.5	18.9	14.1	93.9	38.5	46.3	62.6	72.1	90.5
2009	47	65.0	17.5	2.4	90.1	41.2	53.7	69.1	78.9	83.8
2010	54	64.7	17.4	16.6	103	43.0	55.2	67.3	75.7	85.5
2011	50	64.2	14.1	37.7	86.1	46.4	51.7	65.3	76.9	80.1
2012	55	64.8	14.8	18.6	94.9	46.3	55.9	63.9	72.8	87.2
2013	30	64.1	12.6	34.5	85.5	44.5	57.7	65.1	74.5	77.6
2014	10	65.8	17.4	34.9	88.5	39.5	57.5	67.2	82.2	85.5
1998-2014	558	64.9	15.5	2.4	103	44.1	54.8	66.3	76.6	83.6

Table 3a

Age distribution parameters by year of diagnosis (MALES)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	15	65.4	14.1	38.0	84.5	38.2	58.4	66.8	75.4	82.7
1999	11	56.2	14.1	33.5	72.8	36.0	38.6	60.7	66.3	70.3
2000	15	64.0	16.2	20.4	85.5	44.1	58.0	68.8	73.7	84.2
2001	8	66.7	14.9	51.5	84.7	51.5	53.8	61.7	83.4	84.7
2002	14	69.1	14.7	41.3	92.7	46.6	61.1	69.4	80.8	85.8
2003	23	62.8	13.4	38.2	87.0	46.1	49.8	63.7	71.1	79.6
2004	15	63.3	16.2	25.9	83.4	43.0	54.4	63.3	77.3	82.7
2005	20	63.4	14.1	31.7	78.8	42.5	54.7	68.2	75.2	77.8
2006	21	62.7	11.5	44.7	86.9	48.9	54.0	63.8	68.8	76.9
2007	30	61.6	17.2	20.2	86.2	37.5	53.6	62.0	77.8	81.8
2008	28	58.9	16.1	35.5	93.9	37.9	44.7	59.6	69.5	79.3
2009	29	63.4	19.1	2.4	86.8	39.0	53.7	68.1	78.0	82.0
2010	36	61.1	16.8	16.6	91.3	37.6	51.7	64.5	71.8	76.8
2011	36	63.8	13.8	37.7	85.4	44.1	52.8	63.8	75.6	79.0
2012	29	62.0	15.8	18.6	94.9	45.0	52.3	63.0	71.6	84.3
2013	21	66.8	10.4	39.5	80.9	55.3	62.4	69.4	74.6	76.5
2014	4	77.2	6.6	68.5	82.4	68.5	72.2	79.0	82.3	82.4
1998-2014	355	63.0	15.2	2.4	94.9	41.3	53.5	64.7	74.6	80.9

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	6	68.6	6.7	58.1	76.2	58.1	64.4	69.0	74.9	76.2
1999	7	76.0	5.1	66.8	82.4	66.8	73.4	76.2	80.9	82.4
2000	5	70.5	17.9	49.6	90.5	49.6	59.3	65.6	87.7	90.5
2001	5	67.0	24.2	37.4	89.9	37.4	44.6	79.5	83.8	89.9
2002	11	66.0	10.3	51.7	83.3	53.9	55.5	66.1	77.7	77.9
2003	15	68.3	19.6	16.2	91.8	48.0	52.5	75.2	80.1	84.2
2004	8	69.6	13.7	47.3	88.6	47.3	60.1	69.8	80.7	88.6
2005	11	78.2	12.9	57.9	96.1	58.3	69.9	80.4	89.8	94.1
2006	18	67.5	15.2	24.1	91.0	49.9	63.7	70.5	77.1	83.4
2007	14	66.1	13.2	39.0	83.6	47.7	62.6	67.9	77.1	79.1
2008	12	67.6	23.9	14.1	93.0	44.6	55.7	66.4	90.5	91.7
2009	18	67.6	14.7	41.2	90.1	49.9	54.5	71.2	79.9	85.8
2010	18	71.7	16.9	36.7	103	52.1	56.3	72.9	85.5	89.7
2011	14	65.0	15.5	46.4	86.1	46.7	48.9	69.9	78.8	81.1
2012	26	68.0	13.1	42.5	92.5	54.9	60.6	65.2	77.2	88.4
2013	9	57.7	15.5	34.5	85.5	34.5	52.2	59.1	65.2	85.5
2014	6	58.1	18.6	34.9	88.5	34.9	44.2	57.6	66.0	88.5
1998–2014	203	68.0	15.6	14.1	103	48.0	58.1	69.1	79.5	87.7

Table 4

Age distribution by 5-year age group and gender for period 2007-2014 (incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.3	0.3	1	0.5	0.5			0.0
5-9	0	0.0	0.3			0.5			0.0
10-14	1	0.3	0.6			0.5	1	0.9	0.9
15-19	3	0.9	1.5	3	1.4	1.9			0.9
20-24	1	0.3	1.8	1	0.5	2.3			0.9
25-29	0	0.0	1.8			2.3			0.9
30-34	4	1.2	3.0	2	0.9	3.3	2	1.7	2.6
35-39	15	4.5	7.6	12	5.6	8.9	3	2.6	5.1
40-44	18	5.5	13.0	13	6.1	15.0	5	4.3	9.4
45-49	23	7.0	20.0	15	7.0	22.1	8	6.8	16.2
50-54	24	7.3	27.3	16	7.5	29.6	8	6.8	23.1
55-59	35	10.6	37.9	21	9.9	39.4	14	12.0	35.0
60-64	35	10.6	48.5	24	11.3	50.7	11	9.4	44.4
65-69	38	11.5	60.0	23	10.8	61.5	15	12.8	57.3
70-74	43	13.0	73.0	32	15.0	76.5	11	9.4	66.7
75-79	40	12.1	85.2	27	12.7	89.2	13	11.1	77.8
80-84	22	6.7	91.8	14	6.6	95.8	8	6.8	84.6
85+	27	8.2	100.0	9	4.2	100.0	18	15.4	100.0
All ages	330	100.0		213	100.0		117	100.0	

Included in the statistics are 39.4% multiple primaries in males and 35.7% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 2007-2014

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=5 %	Females DCO rate n=5 %	Males Prop.all cancers n=91183 %	Females Prop.all cancers n=89596 %
0- 4	1		0.1	0.0			0.6	
5- 9			0.0	0.0				
10-14		1	0.0	0.1				1.1
15-19	3		0.3	0.0			1.4	
20-24	1		0.1	0.0			0.3	
25-29			0.0	0.0				
30-34	2	2	0.2	0.2			0.3	0.2
35-39	12	3	0.9	0.2			1.0	0.2
40-44	13	5	0.8	0.3			0.7	0.1
45-49	15	8	0.9	0.5			0.5	0.1
50-54	16	8	1.2	0.6			0.3	0.1
55-59	21	14	2.0	1.2		7.1	0.3	0.2
60-64	24	11	2.4	1.0			0.2	0.1
65-69	23	15	2.4	1.4		6.7	0.1	0.1
70-74	32	11	3.5	1.1			0.2	0.1
75-79	27	13	4.9	1.8	3.7		0.2	0.1
80-84	14	8	4.0	1.4	7.1		0.2	0.1
85+	9	18	3.9	3.1	33.3	16.7	0.1	0.2
All ages	213	117			2.3	4.3	0.2	0.1
Incidence								
Raw			1.2	0.6				
WS			0.7	0.3				
ES			0.9	0.4				
BRD-S			1.1	0.5				

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

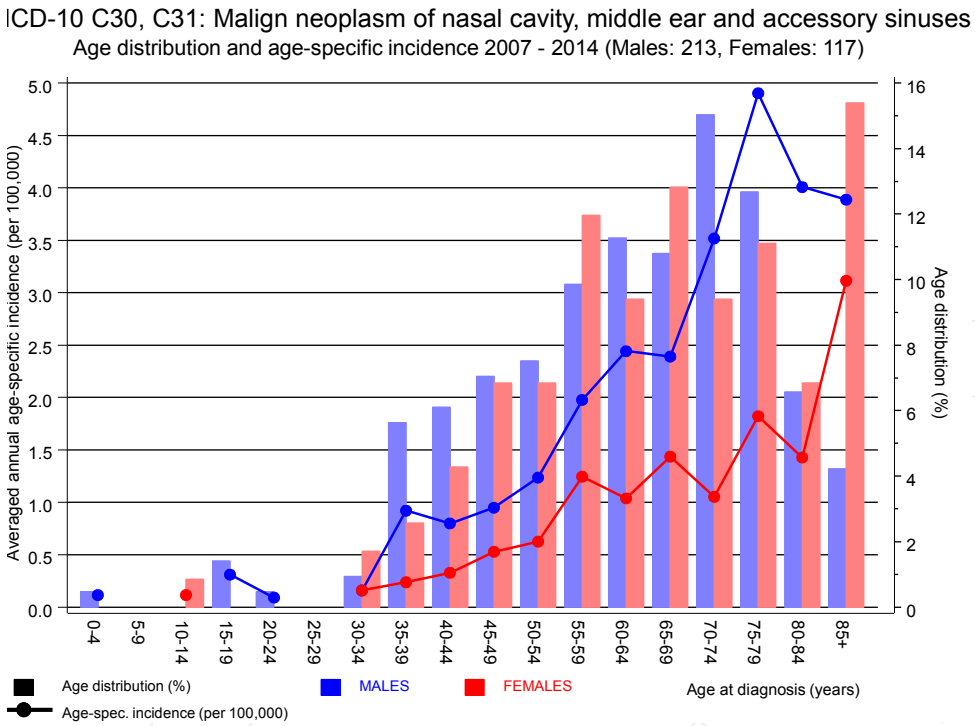


Figure 6. Age distribution and age-specific incidence

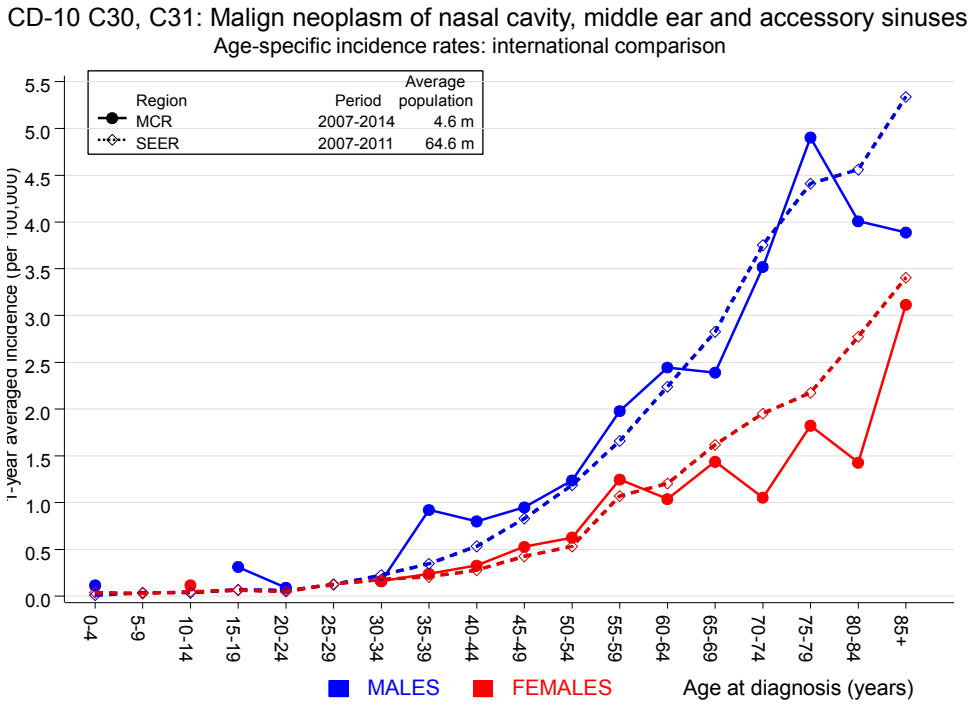


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 submission. http://www.seer.cancer.gov.

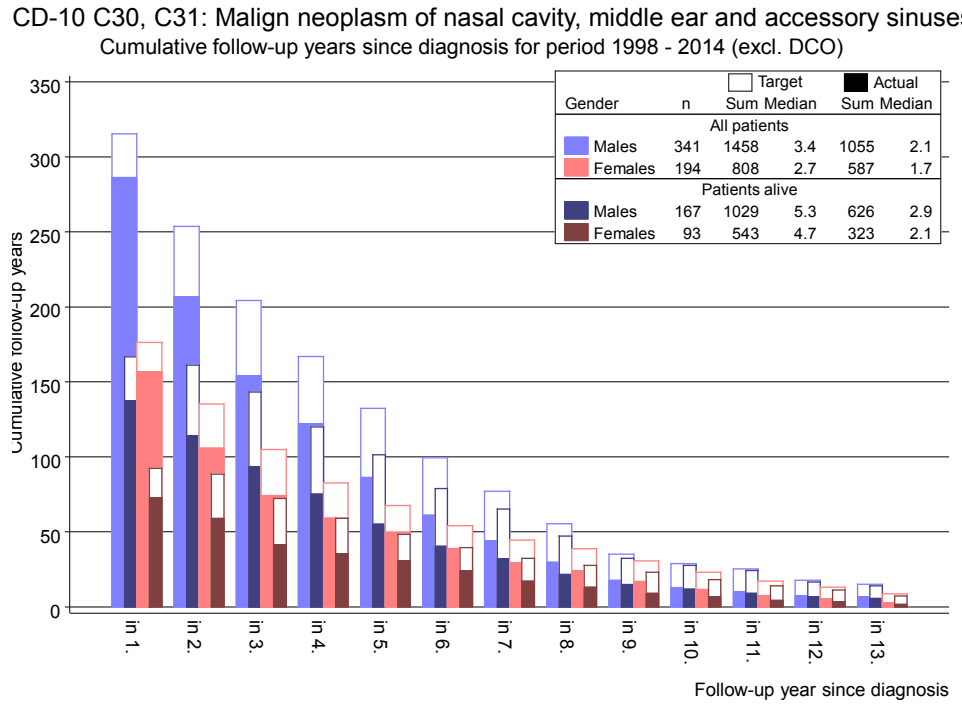


Figure 7. Cumulative follow-up years depending on time since diagnosis

The increase of the lost to follow-up rate can be interpreted as a consequence of a declining number of survivors over time.

Table 8a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2014
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C00	Lip	2	0.0	112.1	13.6	405.1	#	19.0	
C03-C06	Oral cavity	3	0.1	23.0	4.7	67.2	#	27.4	
C09-C10	Oropharynx	2	0.2	12.3	1.5	44.5	#	17.6	50.0
C15	Oesophagus	2	0.3	7.2	0.9	25.9		16.5	
C16	Stomach	3	0.6	4.9	1.0	14.4	#	22.9	
C18	Colon	4	1.5	2.7	0.7	7.0		24.3	
C19-C20	Rectum	4	0.8	4.9	1.3	12.5	#	30.4	
C30-C31	Sinuses	2	0.0	72.4	8.8	261.4	#	18.9	50.0
C33-C34	Lung	7	1.8	3.9	1.6	8.1	#	49.9	
C43	Malign. melanoma	3	0.7	4.5	0.9	13.0		22.3	100.0
C61	Prostate	2	4.4	0.5	0.1	1.6		-22.9	
C76-C79	CUP	2	0.3	7.9	1.0	28.4		16.7	
C82-C85	NHL	2	0.6	3.3	0.4	12.0		13.4	
C91-C96	Leukaemia	2	0.3	8.0	1.0	28.7		16.7	
Other primaries		14	2.4	5.8	3.2	9.8	#	110.9	14.3
Not observed		0	1.4	0.0	0.0	2.6		-13.7	
All mult. primaries		54	15.3	3.5	2.7	4.6	#	370.0	13.0

Patients	344
Median age at second malignancy (years)	70.5
Person-years	1046
Mean observation time (years)	3.0
Median observation time (years)	2.1

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category “Other primaries”

Table 8b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998–2014
FEMALES

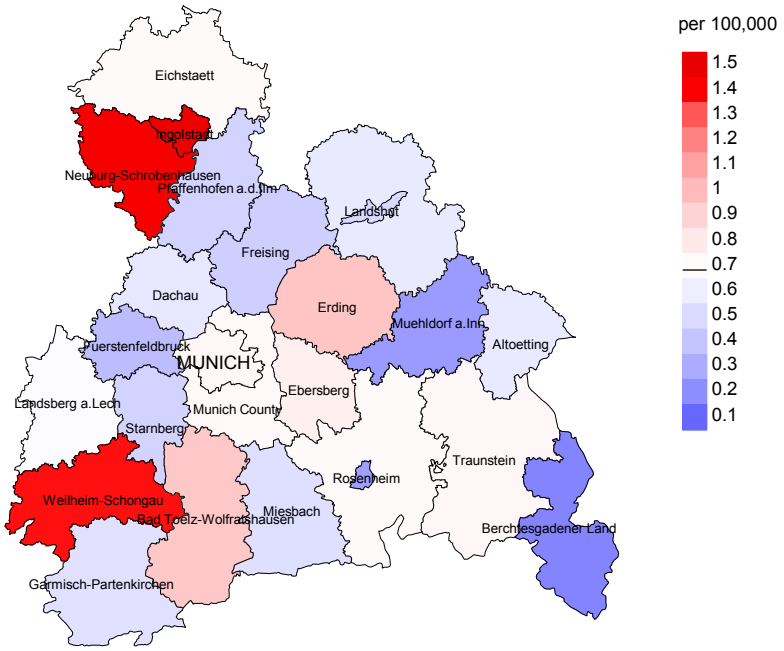
Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03–C06 Oral cavity	2	0.0	50.3	6.1	181.9	#	33.6	
C11 Nasopharynx	2	0.0	790.2	95.7	2854	#	34.3	50.0
C25 Pancreas	2	0.3	6.0	0.7	21.6		28.6	50.0
C30–C31 Sinuses	2	0.0	211.1	25.6	762.4	#	34.2	
C43 Malign. melanoma	2	0.2	8.2	1.0	29.8		30.2	50.0
C91–C96 Leukaemia	2	0.1	16.7	2.0	60.2	#	32.3	
Other primaries	8	3.8	2.1	0.9	4.1		71.7	12.5
Not observed	0	2.4	0.0	0.0	1.6		-40.6	
All mult. primaries	20	6.9	2.9	1.8	4.5	#	224.2	20.0

Patients	194
Median age at second malignancy (years)	78.8
Person-years	583
Mean observation time (years)	3.0
Median observation time (years)	1.7

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category “Other primaries”

Average incidence (world standard population) 2007 - 2014: Males



Average incidence (world standard population) 2007 - 2014: Females

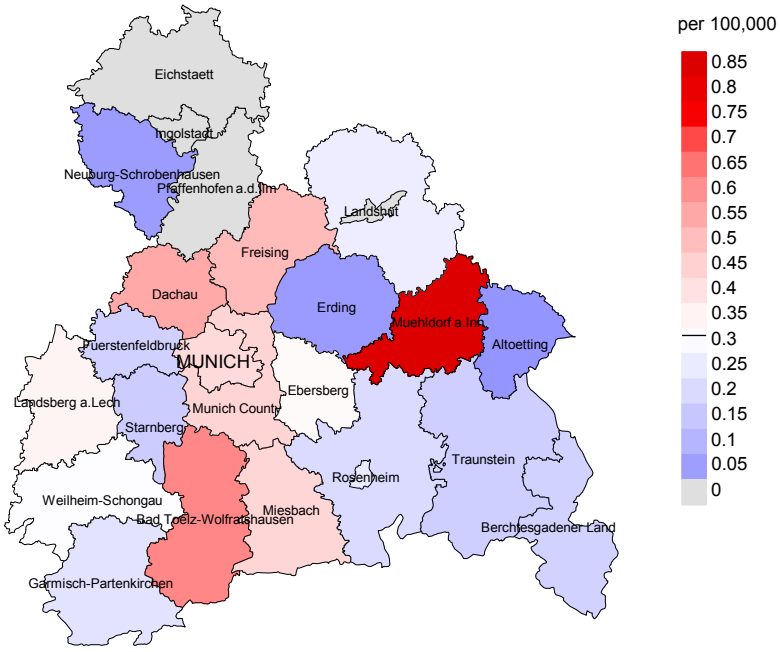
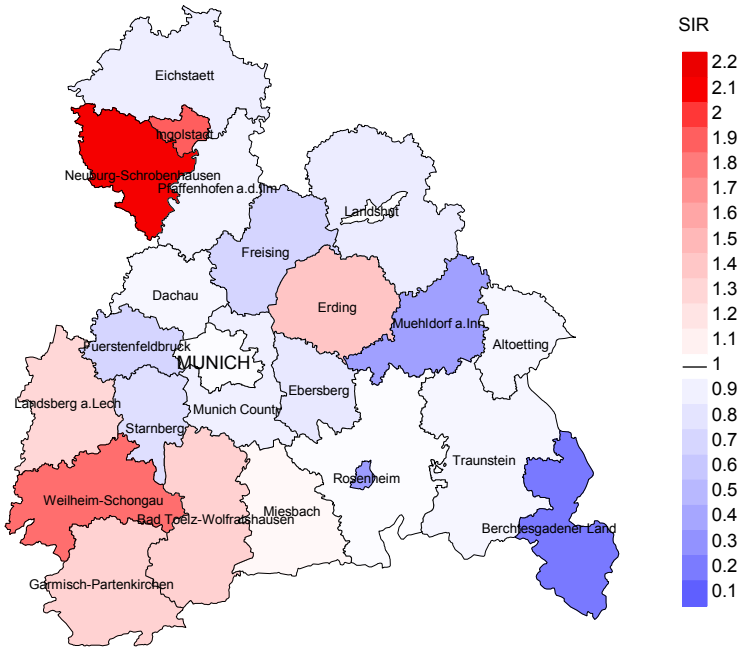


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 0.7/100,000 WS N=213, females 0.3/100,000 WS N=117).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 3 women were identified with newly diagnosed nasal cavity, middle ear, sinuses cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.3/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.4/100,000.

Standardized incidence ratio (SIR) 2007 - 2014: Males



Standardized incidence ratio (SIR) 2007 - 2014: Females

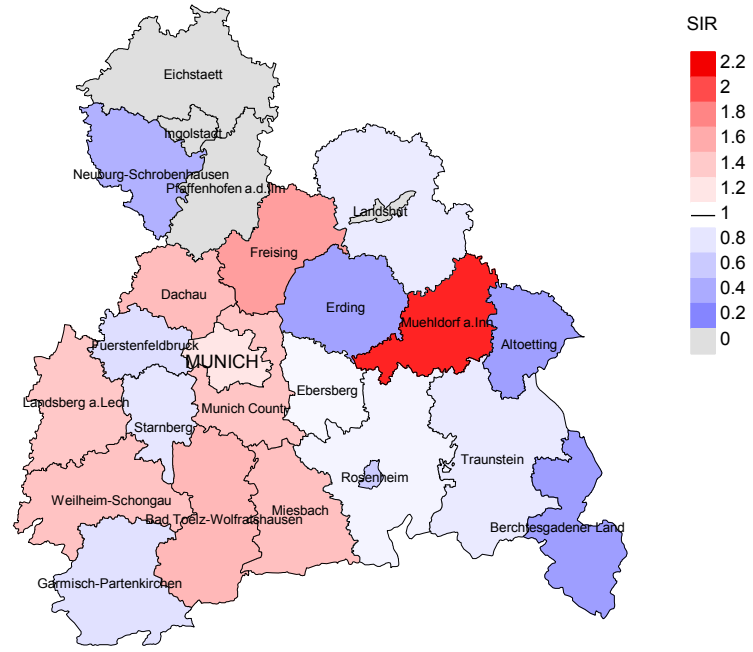


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=213, females N=117).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 3 women were identified with newly diagnosed nasal cavity, middle ear, sinuses cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.95. Though, the value of this parameter may vary with an underlying probability of 99% between 0.11 and 3.48, and is therefore not statistically striking.

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	21	95.2	4.8	17	81.0	94.1
1999	18	100.0		14	77.8	92.9
2000	20	100.0	5.0	14	70.0	100.0
2001	13	100.0	7.7	10	76.9	100.0
2002	25	100.0	8.0	20	80.0	95.0
2003	38	94.7	5.3	29	76.3	96.6
2004	23	100.0		12	52.2	100.0
2005	31	100.0		24	77.4	100.0
2006	39	94.9	7.7	28	71.8	100.0
2007	44	79.5	6.8	20	45.5	100.0
2008	40	77.5	5.0	20	50.0	100.0
2009	47	76.6		23	48.9	100.0
2010	54	75.9	1.9	20	37.0	100.0
2011	50	72.0	4.0	24	48.0	91.7
2012	55	81.8	1.8	13	23.6	100.0
2013	30	100.0		7	23.3	100.0
2014	10	100.0	10.0	4	40.0	100.0
1998-2014	558	87.3	3.6	299	53.6	98.0

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased the same year of cancer diagnosis
(incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	21	12	83.3	3	14.3
1999	18	9	77.8	2	11.1
2000	20	20	100.0	1	5.0
2001	13	16	93.8	3	23.1
2002	25	20	100.0	3	12.0
2003	38	24	100.0	7	18.4
2004	23	21	90.5	1	4.3
2005	31	25	96.0	5	16.1
2006	39	29	100.0	6	15.4
2007	44	22	95.5	7	15.9
2008	40	25	100.0	7	17.5
2009	47	22	100.0	1	2.1
2010	54	27	100.0	2	3.7
2011	50	28	96.4	6	12.0
2012	55	32	96.9	4	7.3
2013	30	38	100.0	3	10.0
2014	10	26	100.0	3	30.0
1998–2014	558	396	97.2	64	11.5

Table 10c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates (incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	12	58.3	41.7	90.0
1999	9	55.6	44.4	100.0
2000	20	85.0	15.0	85.0
2001	16	75.0	25.0	100.0
2002	20	50.0	50.0	70.0
2003	24	70.8	29.2	79.2
2004	21	57.1	42.9	68.4
2005	25	84.0	16.0	91.7
2006	29	82.8	17.2	82.8
2007	22	77.3	22.7	90.5
2008	25	76.0	24.0	84.0
2009	22	77.3	22.7	95.5
2010	27	66.7	33.3	77.8
2011	28	78.6	21.4	85.2
2012	32	65.6	34.4	74.2
2013	38	65.8	34.2	73.7
2014	26	69.2	30.8	76.9
1998-2014	396	71.2	28.8	82.1

Table 11a

Medians of age at death according to the grouping in Table 10
MALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	6	64.9	64.9	66.6	71.1
1999	4	64.1	59.5	68.8	68.8
2000	15	69.2	70.1	63.8	68.6
2001	12	71.2	63.2	74.7	70.6
2002	14	81.3	84.7	78.0	81.1
2003	14	70.2	65.1	77.2	65.7
2004	16	75.0	68.1	78.2	67.6
2005	14	70.2	68.9	74.8	69.6
2006	16	74.9	74.4	86.5	74.3
2007	14	78.5	78.7	72.1	78.5
2008	17	67.2	66.0	80.5	66.0
2009	16	73.6	69.7	80.5	72.5
2010	14	77.9	71.0	83.6	71.3
2011	15	71.9	74.0	62.3	72.9
2012	23	73.2	72.4	80.4	72.4
2013	27	78.9	72.6	85.2	75.3
2014	17	75.1	73.7	88.7	74.4
1998-2014	254	74.2	71.0	80.4	71.2

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 11b

Medians of age at death according to the grouping in Table 10
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	6	83.4	70.9	84.9	83.4
1999	5	76.7	60.0	77.1	72.6
2000	5	77.4	77.4		79.5
2001	4	78.1	78.1		78.1
2002	6	79.5	87.8	78.1	80.8
2003	10	79.2	78.6	94.4	78.6
2004	5	73.6	76.2	73.6	76.2
2005	11	73.3	73.3	77.7	73.3
2006	13	78.8	78.4	97.1	78.8
2007	8	67.0	66.9	101.6	66.9
2008	8	78.0	81.1	75.0	81.1
2009	6	83.9	83.9		83.9
2010	13	74.2	75.0	68.5	71.3
2011	13	74.1	69.5	86.8	69.5
2012	9	89.0	87.6	95.3	87.6
2013	11	80.4	67.6	91.4	77.6
2014	9	86.4	86.9	86.4	86.9
1998-2014	142	78.5	77.3	83.8	77.6

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 years for girls.

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 12a

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	4	0.4	0.27	0.3	0.35	0.4	0.29	0.4	0.25
1999	3	0.3	0.27	0.1	0.24	0.2	0.27	0.2	0.27
2000	12	1.1	0.80	0.6	0.75	0.9	0.79	1.2	0.81
2001	8	0.7	1.00	0.4	1.00	0.6	0.90	0.8	0.95
2002	7	0.4	0.50	0.2	0.41	0.3	0.52	0.5	0.62
2003	10	0.5	0.43	0.3	0.41	0.5	0.44	0.6	0.46
2004	10	0.5	0.67	0.3	0.58	0.4	0.61	0.6	0.65
2005	12	0.6	0.60	0.3	0.59	0.5	0.59	0.7	0.64
2006	12	0.6	0.57	0.3	0.43	0.5	0.48	0.6	0.58
2007	10	0.5	0.33	0.2	0.26	0.3	0.30	0.5	0.37
2008	16	0.7	0.57	0.4	0.52	0.6	0.60	0.7	0.66
2009	11	0.5	0.38	0.3	0.33	0.4	0.36	0.5	0.36
2010	10	0.4	0.28	0.2	0.21	0.3	0.24	0.4	0.29
2011	12	0.5	0.33	0.2	0.27	0.4	0.31	0.5	0.35
2012	16	0.7	0.55	0.4	0.47	0.5	0.49	0.7	0.58
2013	18	0.8	0.86	0.4	0.80	0.6	0.86	0.8	0.90
2014	12	0.5	3.00	0.2	3.98	0.4	3.47	0.5	2.66
1998-2014	183	0.6	0.52	0.3	0.46	0.4	0.49	0.6	0.55

Table 12b

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
FEMALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	3	0.3	0.50	0.1	0.42	0.2	0.45	0.2	0.53
1999	2	0.2	0.29	0.1	0.61	0.2	0.49	0.2	0.30
2000	5	0.4	1.00	0.2	0.99	0.3	0.98	0.4	1.32
2001	4	0.3	0.80	0.1	0.76	0.2	0.80	0.2	0.71
2002	3	0.2	0.27	0.1	0.18	0.1	0.21	0.1	0.20
2003	7	0.4	0.47	0.1	0.35	0.2	0.42	0.3	0.42
2004	2	0.1	0.25	0.0	0.19	0.1	0.20	0.1	0.18
2005	9	0.5	0.82	0.2	1.18	0.3	1.00	0.4	0.91
2006	12	0.6	0.67	0.2	0.38	0.3	0.48	0.5	0.59
2007	7	0.3	0.50	0.2	0.53	0.2	0.54	0.3	0.52
2008	3	0.1	0.25	0.0	0.13	0.1	0.16	0.1	0.22
2009	6	0.3	0.33	0.1	0.20	0.1	0.22	0.2	0.26
2010	8	0.3	0.44	0.1	0.39	0.2	0.39	0.2	0.42
2011	10	0.4	0.71	0.3	0.95	0.3	0.78	0.4	0.71
2012	5	0.2	0.19	0.1	0.11	0.1	0.14	0.1	0.15
2013	7	0.3	0.78	0.1	0.55	0.2	0.61	0.3	0.77
2014	6	0.3	1.00	0.1	0.42	0.1	0.56	0.2	0.77
1998-2014	99	0.3	0.49	0.1	0.40	0.2	0.42	0.2	0.45

Table 13

Age distribution of age at death (cancer-related) for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
15-19	1	0.6	0.6			0.0	1	1.9	1.9
20-24	1	0.6	1.3	1	1.0	1.0			1.9
25-29	1	0.6	1.9			1.0	1	1.9	3.8
30-34	1	0.6	2.5	1	1.0	1.9			3.8
35-39	2	1.3	3.8	2	1.9	3.8			3.8
40-44	3	1.9	5.7	2	1.9	5.7	1	1.9	5.7
45-49	2	1.3	7.0	2	1.9	7.6			5.7
50-54	14	8.9	15.8	11	10.5	18.1	3	5.7	11.3
55-59	12	7.6	23.4	9	8.6	26.7	3	5.7	17.0
60-64	11	7.0	30.4	8	7.6	34.3	3	5.7	22.6
65-69	22	13.9	44.3	12	11.4	45.7	10	18.9	41.5
70-74	16	10.1	54.4	13	12.4	58.1	3	5.7	47.2
75-79	25	15.8	70.3	18	17.1	75.2	7	13.2	60.4
80-84	27	17.1	87.3	18	17.1	92.4	9	17.0	77.4
85+	20	12.7	100.0	8	7.6	100.0	12	22.6	100.0
All ages	158	100.0		105	100.0		53	100.0	

Included in the statistics are 39.4% multiple primaries in males and 35.7% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19		1	0.0		0.1	1.00		4.5
20-24	1		0.1	1.00	0.0		2.1	
25-29		1	0.0		0.1	1.00		1.6
30-34	1		0.1	0.50	0.0		1.1	
35-39	2		0.2	0.17	0.0		1.1	
40-44	2	1	0.1	0.15	0.1	0.20	0.4	0.2
45-49	2		0.1	0.13	0.0		0.2	
50-54	11	3	0.8	0.69	0.2	0.38	0.6	0.2
55-59	9	3	0.8	0.43	0.3	0.21	0.3	0.1
60-64	8	3	0.8	0.33	0.3	0.27	0.2	0.1
65-69	12	10	1.2	0.52	1.0	0.67	0.2	0.2
70-74	13	3	1.4	0.41	0.3	0.27	0.1	0.0
75-79	18	7	3.3	0.67	1.0	0.54	0.2	0.1
80-84	18	9	5.2	1.29	1.6	1.13	0.2	0.1
85+	8	12	3.5	0.89	2.1	0.67	0.1	0.1
All ages	105	53					0.2	0.1
Mortality								
Raw			0.6	0.49	0.3	0.45		
WS			0.3	0.42	0.1	0.37		
ES			0.4	0.46	0.2	0.38		
BRD-S			0.6	0.52	0.2	0.42		
PYLL-70								
per 100,000			4.0		1.6			
ES			3.7		1.6			
AYLL-70			13.4		11.8			

The rates underestimate the prognosis if other synchronous cancers are prognostic unfavorable.

Table 15a

Multiple primaries in deaths in period 1998–2014
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06 Oral cavity	8	7.2	6	75.0			2	25.0
C07–C08 Salivary gland	3	2.7	1	33.3			2	66.7
C09–C10 Oropharynx	5	4.5	3	60.0			2	40.0
C12–C13 Hypopharynx	2	1.8	1	50.0			1	50.0
C15 Oesophagus	2	1.8					2	100.0
C16 Stomach	5	4.5	2	40.0			3	60.0
C18 Colon	5	4.5	2	40.0			3	60.0
C19–C20 Rectum	2	1.8					2	100.0
C23–C24 Bile	2	1.8					2	100.0
C30–C31 Sinuses	2	1.8					2	100.0
C32 Larynx	6	5.4	6	100.0				
C33–C34 Lung	11	9.9					11	100.0
C43 Malign. melanoma	4	3.6	1	25.0			3	75.0
C44 Skin others	8	7.2	4	50.0	1	12.5	3	37.5
C46,C49 Soft tissue	3	2.7	1	33.3			2	66.7
C61 Prostate	15	13.5	6	40.0	1	6.7	8	53.3
C67 Bladder	5	4.5	1	20.0			4	80.0
C70–C72 CNS cancer	2	1.8	1	50.0			1	50.0
C76–C79 CUP	3	2.7	1	33.3	1	33.3	1	33.3
C82–C85 NHL	4	3.6	1	25.0			3	75.0
C90 Mult. myeloma	3	2.7	1	33.3			2	66.7
C91–C96 Leukaemia	2	1.8					2	100.0
Other primaries	9	8.1	1	11.1	2	22.2	6	66.7
All mult. primaries	111	100.0	39	35.1	5	4.5	67	60.4

Multiple primaries with number of cases 1 are pooled in category “Other primaries”

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a multiple malignancy.

Table 15b

Multiple primaries in deaths in period 1998–2014
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	1	1.6	1	100.0				
C03–C06	Oral cavity	6	9.8	3	50.0			3	50.0
C09–C10	Oropharynx	2	3.3	2	100.0				
C11	Nasopharynx	3	4.9	1	33.3			2	66.7
C12–C13	Hypopharynx	1	1.6	1	100.0				
C14	ENT cancer	1	1.6					1	100.0
C16	Stomach	1	1.6					1	100.0
C18	Colon	2	3.3	2	100.0				
C22	Liver	1	1.6					1	100.0
C25	Pancreas	2	3.3					2	100.0
C30–C31	Sinuses	1	1.6					1	100.0
C32	Larynx	1	1.6	1	100.0				
C33–C34	Lung	2	3.3					2	100.0
C43	Malign. melanoma	4	6.6	2	50.0	1	25.0	1	25.0
C44	Skin others	4	6.6			2	50.0	2	50.0
C50	Breast	11	18.0	9	81.8			2	18.2
C51	Vulva	1	1.6	1	100.0				
C53	Cervix uteri	1	1.6	1	100.0				
C54	Corpus uteri	2	3.3	2	100.0				
C56	Ovary	2	3.3					2	100.0
C67	Bladder	1	1.6					1	100.0
C70–C72	CNS cancer	5	8.2	2	40.0	1	20.0	2	40.0
C82–C85	NHL	2	3.3	1	50.0			1	50.0
C90	Mult. myeloma	1	1.6					1	100.0
C91–C96	Leukaemia	3	4.9	1	33.3			2	66.7
All mult. primaries		61	100.0	30	49.2	4	6.6	27	44.3

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a multiple malignancy.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19		1	0.0		0.1	1.00		5.0
20-24	1		0.1	1.00	0.0		2.3	
25-29		1	0.0		0.1	1.00		1.7
30-34	1		0.1	1.00	0.0		1.2	
35-39	2		0.2	0.17	0.0		1.2	
40-44	2	1	0.1	0.15	0.1	0.25	0.5	0.2
45-49	2		0.1	0.14	0.0		0.2	
50-54	10	3	0.8	0.67	0.2	0.43	0.6	0.2
55-59	9	2	0.8	0.53	0.2	0.22	0.3	0.1
60-64	7	1	0.7	0.30	0.1	0.11	0.2	0.0
65-69	12	7	1.2	0.67	0.7	0.64	0.2	0.2
70-74	9	1	1.0	0.43	0.1	0.10	0.1	0.0
75-79	11	6	2.0	0.55	0.8	0.60	0.2	0.1
80-84	15	5	4.3	1.50	0.9	0.83	0.3	0.1
85+	6	9	2.6	1.00	1.6	0.69	0.1	0.1
All ages	87	37					0.2	0.1
Mortality								
Raw			0.5	0.50	0.2	0.41		
WS			0.2	0.42	0.1	0.35		
ES			0.4	0.47	0.1	0.35		
BRD-S			0.5	0.52	0.2	0.39		
PYLL-70								
per 100,000			3.9		1.4			
ES			3.5		1.4			
AYLL-70			13.5		14.1			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19		1	0.0		0.1	1.00		5.6
20-24	1		0.1	1.00	0.0		2.6	
25-29		1	0.0		0.1	1.00		1.8
30-34	1		0.1	1.00	0.0		1.2	
35-39	2		0.2	0.18	0.0		1.3	
40-44	2		0.1	0.18	0.0		0.5	
45-49			0.0		0.0			
50-54	8	3	0.6	0.53	0.2	0.43	0.6	0.2
55-59	7	2	0.7	0.50	0.2	0.22	0.3	0.1
60-64	6	1	0.6	0.30	0.1	0.11	0.2	0.0
65-69	8	5	0.8	0.47	0.5	0.50	0.2	0.1
70-74	7	1	0.8	0.35	0.1	0.10	0.1	0.0
75-79	9	5	1.6	0.50	0.7	0.56	0.2	0.1
80-84	8	3	2.3	1.00	0.5	0.60	0.2	0.1
85+	3	4	1.3	0.75	0.7	0.40	0.1	0.1
All ages	62	26					0.2	0.1
Mortality								
Raw			0.3	0.39	0.1	0.31		
WS			0.2	0.34	0.1	0.29		
ES			0.3	0.38	0.1	0.29		
BRD-S			0.3	0.41	0.1	0.31		
PYLL-70								
per 100,000			3.1		1.2			
ES			2.9		1.2			
AYLL-70			14.2		14.8			

* See corresponding tables with multiple primaries.

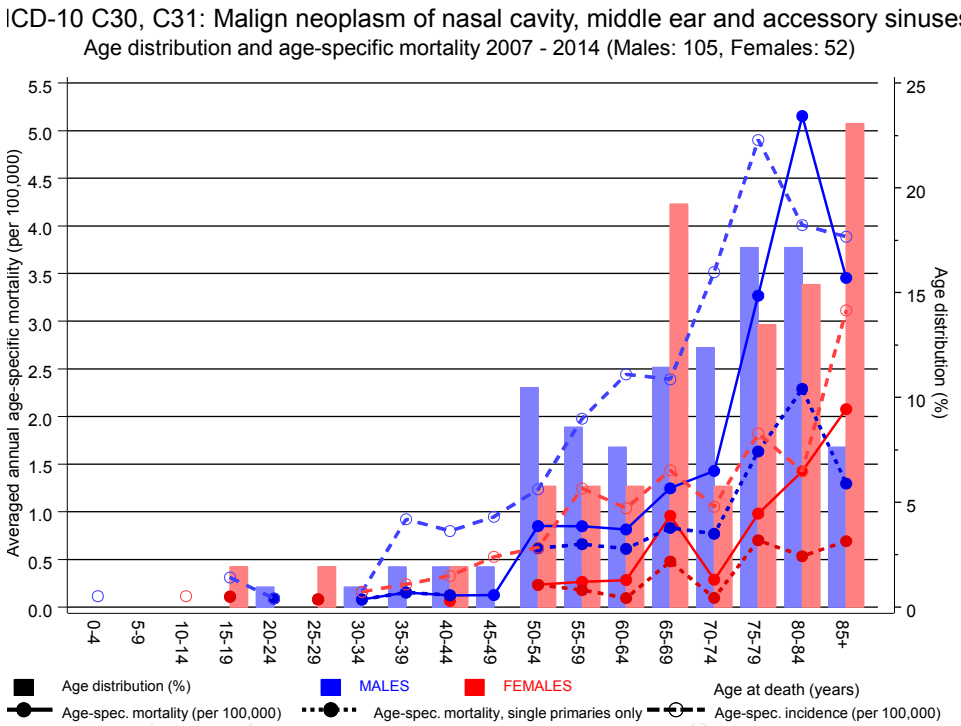
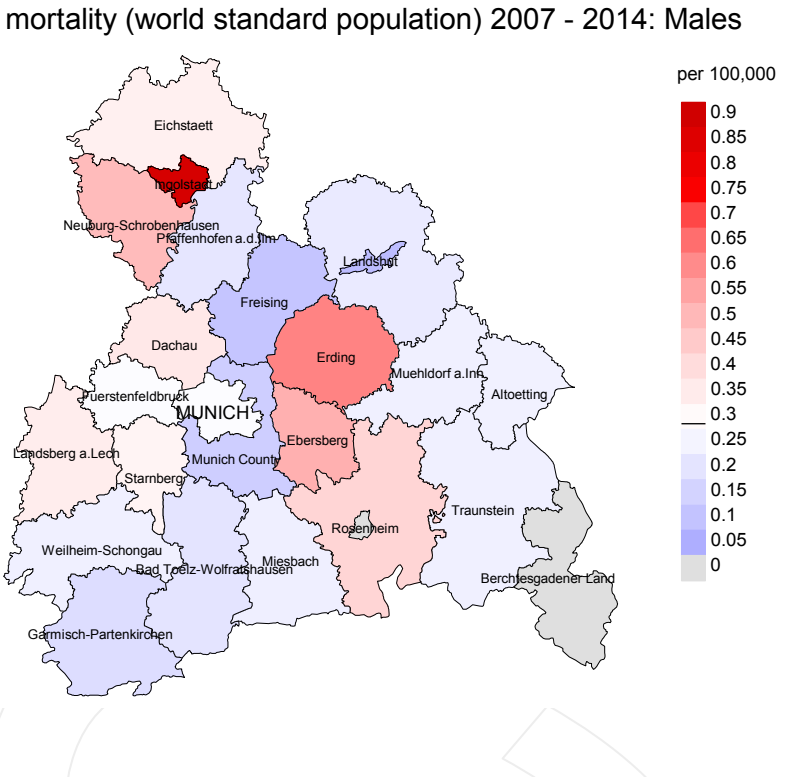


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at nasal cavity, middle ear, sinuses cancer-related death (see Table 10) should be considered.



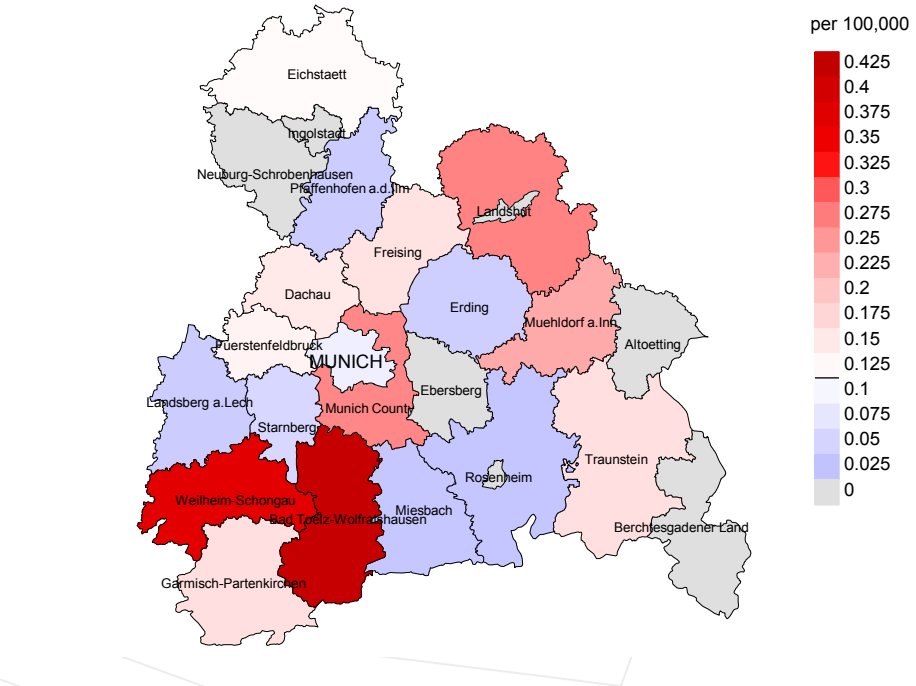
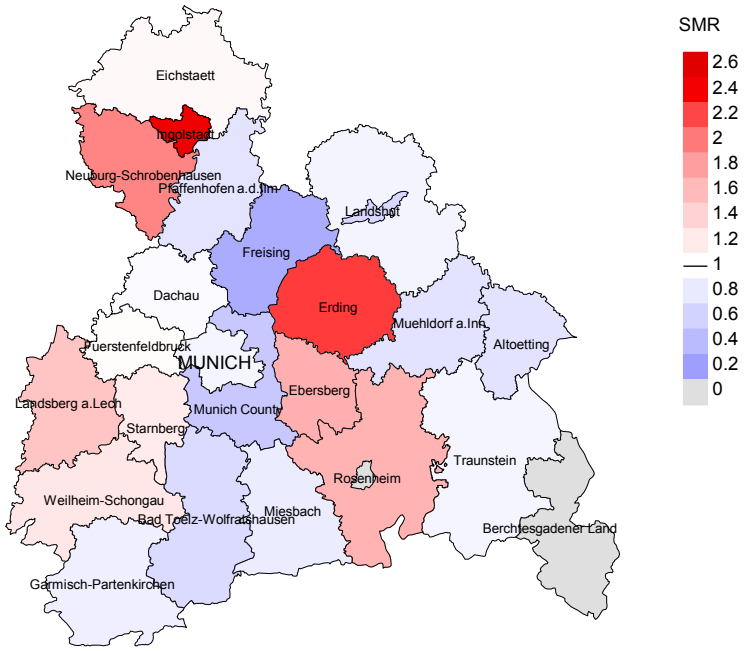


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2014. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 0.3/100,000 WS N=105, females 0.1/100,000 WS N=51).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 0 women died from nasal cavity, middle ear, sinuses cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.0/100,000.

Standardized mortality ratio (SMR) 2007 - 2014: Males



Standardized mortality ratio (SMR) 2007 - 2014: Females

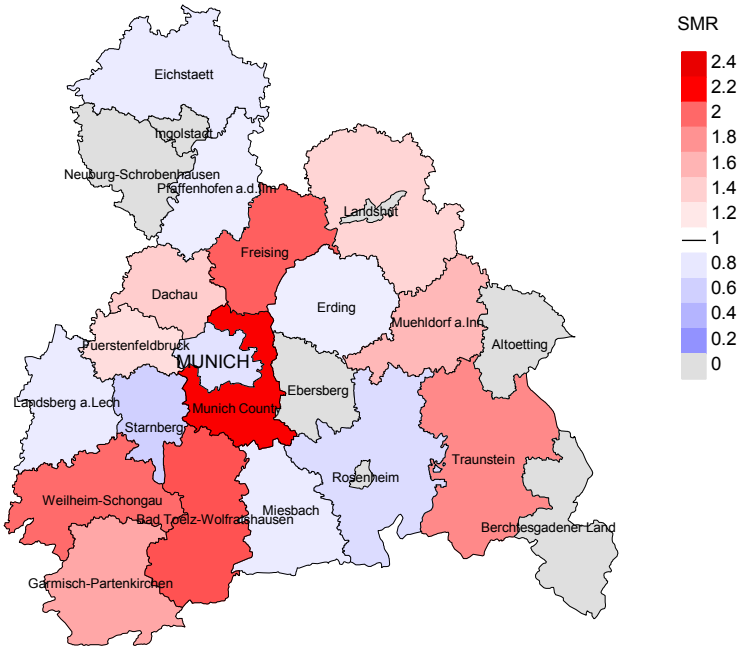


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=105, females N=51).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 0 women died from nasal cavity, middle ear, sinuses cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.00. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 3.99, and is therefore not statistically striking.

Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. **All multiple primaries included**

   The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. **First singular primary** (no information about other prior or synchronous malignancy)

   The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. **Single primary** (no information about other prior, syn- or metachronous malignancy)

   The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head/neck and lung).

The index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MI- index. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

FRG	Federal Republic of Germany
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
MCR	Munich Cancer Registry (Tumorregister München)
SEER	Surveillance, Epidemiology, and End Results (USA)
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
BRD-S	German standard population
DCO	Death certificate only
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
ES	European standard population (old)
LCL	Lower confidence limit
MI-index	Ratio between mortality and incidence
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
SIR	Standardized incidence ratio
SMR	Standardized mortality ratio
UCL	Upper confidence limit
WS	World standard population

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